

Track Path Animation at 20 times Real Time Speed

M/V *Cosco Busan* allision with the San Francisco-Oakland Bay Bridge
San Francisco, California
November 7, 2007
DCA08MM004

This two-dimensional animation depicts the allision of the M/V *Cosco Busan* with San Francisco-Oakland Bay Bridge in San Francisco, California on November 7, 2007. The primary display shows a nautical chart* with the track path of the M/V *Cosco Busan*.

The animation displays performance data and information from the voyage data recorder. The animation is played at 20 times real speed with the start time of 08:00 and end time of 08:30. Weather and visibility conditions at the time of the accident are not shown. This animation contains audio narration. This animation is available in Windows Media format, .wmv and the file size is 6 megabytes.

*This product has been derived in part from SeaZone mapping images and material obtained from the UK Hydrographic Office with the permission of the Controller of Her Majesty's Stationery Office and the UK Hydrographic Office (www.ukho.gov.uk). "NOT TO BE USED FOR NAVIGATION".

Narration:

1. This animation presents the path of the motor vessel *Cosco Busan* before it allided with the San Francisco Oakland Bay Bridge on Nov 7th, 2007.
2. The 30 minute animation will be played at 20 times real time speed.
3. The animation begins around the time the pilot orders the ship's engine to dead slow ahead.
4. The pilot orders courses to be steered while in the inner harbor entrance channel, as the ship approached the bar channel.
5. The pilot asked the master what is the meaning of a red triangle symbol on the electronic chart.
6. As the ship approached the bar channel, the Pilot ordered port rudder to begin a left turn from the inner harbor channel.
7. The pilot ordered starboard rudder commands.
8. The Vessel Traffic Services operator asked the pilot to verify his intentions with regard to which span he intended to use.

9. As the ship approached the delta tower, within the last two and a half minutes before the allision, the pilot ordered a series of six rudder commands.
10. The allision occurred about 0830.

Track Path Animation in Real Time Speed

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This two-dimensional animation depicts the allision of the M/V *Cosco Busan* with San Francisco-Oakland Bay Bridge in San Francisco, California on November 7, 2007. The primary display shows a nautical chart* with the track path of the M/V *Cosco Busan* and the inset displays the radar.

The animation displays performance data, information from the voyage data recorder and the local time of day. Selected bridge voice recorder comments at the time they occurred are displayed as text. The animation is played at real time speed with the start time of 08:26 and end time of 08:30. Weather and visibility conditions at the time of the accident are not shown. This animation contains audio narration. This animation is available in Windows Media format, .wmv and the files size is 15 megabytes.

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Narration:

1. This animation is a real time presentation of the *Cosco Busan* allision with the San Francisco-Oakland Bay Bridge from 08:26 to 08:30.
2. The ship completed its port turn and was on heading 245 degrees, the pilot ordered the rudder to starboard to commence a turn to starboard.
3. The pilot increased the rate of turn to starboard with a rudder order of twenty degrees and, shortly afterward, an engine order of full ahead.
4. The radar screen capture indicates that the VRM circle which was set at .33 miles is moving away from the edge of Yerba Buena Island.

5. The ship's speed over ground is 10.8 knots.
6. The VTS operator monitoring the *Cosco Busan*'s transit through the harbor became concerned with the position of the ship and called the pilot using his designator Romeo.
7. The pilot responded to VTS saying, traffic romeo.
8. The pilot ordered a reduction in the starboard rudder angle from twenty degrees to ten degrees, at this time the ship's heading was about 261 degrees and its course over ground was about 235 degrees.
9. VTS asked the pilot to clarify his intentions.
10. The pilot responded to VTS that he was coming around and he was steering 280.
11. The pilot ordered an increase in the rudder angle to starboard 20.
12. VTS asked if he still intended to pass under the delta – echo span of the bridge.
13. The pilot asked the master if a point on the electronic chart was the center of the bridge, and he responded in the affirmative.
14. The pilot increased the rudder from 20 degrees to hard starboard and called VTS saying that he still intended to use the delta echo span.
15. The pilot ordered the rudder to be centered.
16. The pilot then ordered the rudder to starboard 20.
17. The pilot ordered the rudder hard to starboard.
18. The ship's bosun, who was on the bow of the ship, radioed the bridge calling their attention to his sighting of the bridge column.
19. The master stated that he also saw the bridge column.
20. The pilot said he saw the bridge column.
21. As the ship's port side came in contact with the fendering system at the base of the delta tower, the pilot ordered the rudder to be centered, and then hard to port.
22. As the ship cleared the fendering system the pilot ordered the rudder to be centered and ship's speed to be slowed.

23. The pilot called the VTS operator to report the accident and stated that he was taking the ship to a nearby anchorage.

Transcript Excerpts:

08:26:23 PILOT starboard ten.

08:26:37 PILOT starboard twenty.

08:26:54 PILOT full ahead.

08:27:24 VTS unit romeo traffic.

08:27:29 PILOT traffic romeo.

08:27:37 PILOT ease to ten.

08:27:45 PILOT traffic romeo did you call.

08:27:48 VTS unit romeo traffic uh AIS shows you on two three five heading what are your intentions over?

08:27:57 PILOT well I'm comin' around I'm steering two eighty right now.

08:28:02 PILOT starboard twenty.

08:28:04 VTS roger understand you still intend **span?

08:28:08 PILOT this is the center of the bridge right?

08:28:11 CREW yeah yeah.

08:28:13 PILOT hard starboard.

08:28:15 PILOT yeah we're still delta echo.

08:28:42 PILOT midships.

08:28:51 PILOT starboard twenty.

08:29:01 PILOT hard starboard.

08:29:09 BOSUN the bridge column the bridge column.

08:29:11 CAPT oh I see it.

08:29:16	PILOT	yeah I see it.
08:29:26	PILOT	midships.
08:29:31	PILOT	hard port.
08:30:07	PILOT	okay midships.
08:30:10	PILOT	dead slow ahead.
08:30:12	PILOT	yeah traffic we just touch the delta span I'm gonna go to...I'm gonna try get her anchored anchorage nine-or anchorage seven.